readily maneuverable, have ample stability in a seaway, and sufficient freeboard when fully loaded with their full complement of persons and equipment. All lifeboats shall be capable of maintaining positive stability when open to the sea and loaded with their full complement of persons and equipment. All lifeboats must be open boats with rigid sides having internal buoyancy only. Lifeboats with a rigid shelter may be approved, provided that it may be readily opened from both inside and outside, and does not impede rapid embarkation and disembarkation or the launching and handling of the lifeboat.

(c) Lifeboats may be constructed of steel, aluminum, fibrous glass reinforced plastic (FRP), or other materials receiving specific approval: *Provided,* That, the weight of the fully equipped and loaded lifeboat shall not exceed 44,800 pounds, and the carrying capacity calculated in accordance with § 160.035–9 of this specification shall not exceed 150 persons.

(1) The thwarts, side benches and footings of lifeboats shall be painted or otherwise colored international orange in accordance with Federal Specification TT–P–59. The area in way of the red mechanical disengaging gear control lever, from the keel to the side bench, shall be painted or otherwise colored white, to provide a contrasting background for the lever. This band of white should be approximately 12 inches wide depending on the internal arrangements of the lifeboat.

(d) For the purpose of calculations and conducting tests, the weight of the persons shall be taken at 165 pounds each.

[CGFR 65–9, 30 FR 11467, Sept. 8, 1965, as amended by CGD 95–028, 62 FR 51211, Sept. 30, 1997]

§ 160.035–3 Construction of steel oar-propelled lifeboats.

(a) *Type.* Lifeboats shall have rigid sides and be fitted with internal buoyancy so arranged that the boats will float in the flooded condition when fully loaded with persons and equipment. The capacity of an oar-propelled lifeboat is limited to a maximum of 59 persons. Lifeboats designed to carry 60, but not more than 100, persons shall be either hand-propelled or motor-propelled. Lifeboats designed to carry more than 100 persons shall be motor-propelled, except that a lifeboat designed to carry more than 100 persons may be hand-propelled if it is a replacement for a previously approved hand-propelled lifeboat.

(b) *Materials.* (1) Plating for shell, floors, air tanks, etc., shall be made by the open-hearth or electric furnace process in accordance with ASTM Standards A–525 Class 1.25 Commercial. The bend tests required by these specifications shall be made after the galvanizing or other anticorrosive treatment has been applied.

(2) Rivets and rolled or extruded shapes such as keel, stem, sternpost, gunwales, etc., shall be made by the open-hearth or electric furnace process in accordance with ASTM Standard Specification A–36. Consideration will be given to the use of other steels having equivalent strength where longitudinal cold forming is necessary.

(c) *Riveting.* (1) Riveting of the shell plating to the keel, stem, and sternpost shall be button head rivets, staggered with not less than 12 rivets to the foot. The distance from the edge of the plate to the centers of the rivets in the nearest row shall be not less than ½ inch nor more than ¾ inch. Rivets connecting the shell to the gunwale shall be spaced not more than 3 inches on centers. The size of the rivets for connecting the shell plating to the keel, stem, sternpost, and gunwale shall be ¼-inch diameter for boats 28 feet and under and 5⁄16-inch diameter for boats over 28 feet.

(2) The connection of the floors to the shell shall be a single row of rivets not less than 3⁄16 inch in diameter and spaced not more than 3 inches on centers.

(d) *Welding.* Welding may be substituted for riveting in any location. It shall be performed by welders qualified by the U.S. Coast Guard, American Bureau of Shipping, or U.S. Navy Department, and only approved electrodes shall be used. Details of the joints shall be indicated on the construction drawings submitted for approval.

(e) *Gunwale braces.* (1) The gunwale braces shall be bolted to the thwarts with at least two carriage bolts of a

size not less than that noted in table 160.035–3(e)(1) and riveted or welded to the gunwales. Where riveted to the gunwale, at least two rivets of a size not less than that noted in table 160.035–3(e)(1) shall be used.

TABLE 160.035–3(E)(1)

Length of lifeboat	Brace size (inches)	Bolts and rivets diameter (inch)
22 feet and under	3×¼	5/16
Over 22 feet and not over 28.	3×5/16	3/8
Over 28 feet	3×3/8	7/16

(2) Bracket type gunwale braces will be given special consideration.

(f) *Seats.* (1) The thwarts, side benches, and end benches shall be of fir, yellow pine, fibrous glass reinforced plastic (FRP), or approved equivalent.

(2) The edges of all thwarts, side, and end benches shall be well rounded.

(3) Suitable foot rests shall be furnished at a distance of between 17 and 20 inches below the thwarts and side benches. This may be accomplished by raising the footings from the bottom of the boat.

(4) The leading edge of the thwart or end bench shall be located a minimum of 3 inches and a maximum of 6 inches distance from the Rottmer release gear.

(g) *Stretchers.* Stretchers of sufficient size and strength shall be fitted in suitable positions for rowing.

(h) *Disengaging apparatus.* (1) Connections for the disengaging apparatus shall have a minimum factor of safety of six.

(2) For construction and capacity of disengaging apparatus, see subpart 160.033.

(i) *Plugs.* Each lifeboat shall be fitted with an automatic plug so designed and installed as to insure complete drainage at all times when the boat is out of the water. The automatic plug shall be provided with a cap attached to the lifeboat by a suitable chain. The location of drain plug is to be marked on the vertical surface in the vicinity of the plug below the side bench with the word ''plug'' in 3-inch white letters and with an arrow pointing in the direction of the drain plug.

(j) *Protection against corrosion.* (1) All steel or iron entering into the construction of lifeboats shall be galvanized by the hot dipped process. All fabricated pieces or sections are to be galvanized after fabrication. Other methods of corrosion prevention will be given special consideration.

(2) Where welded construction is employed, the material shall be galvanized after welding unless impractical to do so in which case consideration will be given to equivalent protection.

(3) Provisions shall be made to obtain a satisfactory bond between the metal and the paint.

(k) *Rudders.* (1) Each lifeboat shall be fitted with a rudder and tiller. The rudder shall be fitted with a ½-inch diameter manila lanyard of such length as to permit the rudder to be shipped without untying the lanyard.

(2) A suitable hinged or pivoted tiller shall be provided.

(3) Rudder stops shall be provided to limit the rudder angle to approximately 45 degrees each side of the centerline.

(l) *Buoyancy tanks.* (1) All lifeboats shall have inherent buoyancy, or shall be fitted with buoyancy tanks or other equivalent noncorrodible buoyancy units, which shall not be adversely affected by oil or oil products, sufficient to float the boat and its equipment when the boat is flooded and open to the sea. An additional volume of buoyancy, or buoyancy units, equal to at least one-tenth the cubic capacity of the lifeboat shall be provided.

(2) At least 50 percent of the buoyancy shall be located along the sides of the boat and shall be so located that the boat will be on even keel when flooded.

(3) The tops of the buoyancy tanks or buoyancy units shall be protected by the side benches or other suitable means. The construction shall be such that water will not collect on the tops of the tanks.

(4) *Built-in buoyancy tanks.* Each built-in buoyancy tank shall be filled with buoyancy material. The amount of material required shall be determined by the flooding test in accordance with § 160.035–11(b)(2). The buoyancy materials used shall meet the requirements set forth for core materials as follows:

Core ..... Polystyrene MIL–P–40619

	MIL–P–19644
Polyurethane	MIL–P–21929

(m) *Equipment stowage.* (1) Provision lockers, water tanks, and special equipment lockers shall be watertight and so designed and located as to fit under the side benches, end benches, or footings without projecting into the accommodation spaces of the lifeboat. In special cases, stowage under the thwarts will be permitted. Standard ¼ inch pipe size testing nipples shall be fitted to all such lockers or tanks.

(2) Water tanks shall be constructed of at least 18 USSG material. An opening with a dogged type cover shall be provided for removal of water cans. This opening shall be at least 7 inches in diameter, but in any case shall be of sufficient size that all water cans can be removed. In addition, built-in water tanks shall have an opening at least 13 inches in diameter with a bolted cover for the purpose of inspection and maintenance. A 2-inch diameter fill cap shall be installed for the purpose of storing rain water. A standard ¼-inch pipe size drainage nipple with hexagonal cap shall be fitted in the bottom of the tank in an accessible location and may be used for air testing the water tank.

(n) *Grab rails.* Grab rails shall be substantially attached to each lifeboat below the turn of the bilge and extend approximately one-half of the length of the lifeboat on each side. The ends of the grab rails shall be faired to prevent fouling and all connections of the rails to the lifeboat shall be made by riveting the palms of the brackets to a small plate and riveting the plate to the shell. To prevent rupture of the shell if the grab rail is carried away, more rivets shall be used in attaching the plate to the shell than in fastening the bracket to the plate. The clearance between the grab rail pipe and the hull shall be at least 1½ inches. The connections of the rails to a fibrous glass reinforced plastic lifeboat hull will be given special consideration.

(o) *Hand rails.* All lifeboats intended for use in ocean and coastwise service shall be fitted with hand rails approximately 18 inches in length, constructed and attached to the lifeboat in the same manner as the grab rails required by paragraph (n) of this section. The clearance between the hand rail pipe and the hull shall be at least 1½ inches. The hand rails shall be located approximately parallel to and at both ends of the grab rails and spaced midway between the grab rail and the gunwale and midway between the grab rail and the keel on both sides of the lifeboat provided that, when the distance from grab rail to gunwale or to the keel exceeds 4 feet, two hand rails shall be fitted so as to provide equal spacing. In no case shall the hand rails project beyond the widest part of the boat. Recessed hand rails or other alternate arrangements will be given consideration.

[CGD 95–028, 62 FR 51211, Sept. 30, 1997, as amended by USCG–1998–4442, 63 FR 52191, Sept. 30, 1998]

§ 160.035–5 Construction of steel motor-propelled lifeboats with and without radio cabin.

(a) *General provisions applicable to all motor-propelled lifeboats.* (1) A motor-propelled lifeboat, carried as part of the lifesaving equipment of a vessel, whether required or not, shall comply with all the requirements for an oar-propelled lifeboat, and in addition, shall have sufficient additional buoyancy to compensate for the weight of the engine and other equipment.

(2) The engine shall be enclosed in a suitable engine box which shall be watertight with the exception of the top which may be weathertight. If the engine box is made of material other than steel or aluminum, such as fibrous glass reinforced plastic, it shall be made of fire retardant material. The top of the engine box shall be fitted with a screwdown mushroom vent. The engine box shall be fitted with a suitable drain. An engine starting instruction plate shall be permanently attached to the engine box. There shall be ample space between the engine and the engine box to permit proper maintenance and removal of engine accessories when necessary. If the internal arrangements of the engine in the engine box do not permit this, then suitable watertight hand-hole plates shall be installed in the vicinity of these accessories. The location of these plates